1) Brief about the history of Artificial Intelligence?
2) Write about the intelligent system, and its categorization?

OR

1) What is a task environment? How it is specified? List the properties of task environments. Give an example of PEAS description for an automated taxi
2) Give PEAS description for different agent types?

1) Explain the characteristics of a problem?
2) Illustrate Depth-First Search tree generation with an example?

OR

1) Write notes on constraint satisfaction problem?
2) State & Explain the travelling salesman problem?

1) Write notes on Equivalence Laws in propositional calculus?
2) Explain the concept of propositional logic with an example?

OR

1) Enumerate the rules of natural deduction system?
2) Prove that A Λ (B V C) is deduced from A Λ B?

1) Enumerate knowledge representation approaches.
2) With an Example, Explain knowledge representation in a table.

OR

1) Discuss about ES shells and tools.
2) With a neat figure, explain the architecture of an expert system?

1) Explain the phases in building expert systems?
2) Describe the concept of knowledge engineering?

OR

1) Discuss about Linguistic variables and Hedges
2) Discuss about joint and conditional probability

1) What are the four different kinds of agent programs? Explain a simple reflex agent with a diagram.
2) Explain with a diagram the model based reflex agent.

OR

1) Explain with a diagram the goal based reflex agent.
2) What are the components of well-defined problems? Explain them by taking tic-tac-toe game.

1) Describe Depth- First iteration deepening algorithm?
2) Write notes on heuristic search techniques?

OR

1) Give elaborate idea about hill climbing?
2) Describe best first search method?

1) Prove the theorem infer $[(A \rightarrow B) \Lambda (B \rightarrow C)] \rightarrow (A \rightarrow C)$?
2) What is 'axiom'? Explain axiomatic system with example.

OR

1) Define Semantic tableau. Mention the semantic tableau rules where α and β are two formulae?
2) Construct a semantic tableau for a formula $(A \Lambda \sim B) \Lambda (\sim B \rightarrow C)$?

1) Discuss about extended semantic networks for KR.
2) Define inference rules. Represent the following clauses in ES Network: recipient(E,X) ← action(E, take),actor(E,X) ; object (e, apple) ; action(e, take); actor(e,john).

OR

1) Discuss about Expert system shell in prolog (backward chaining) in rule based expert systems.
2) Explain about problem independent forward chaining in prolog to define Expert systems.

1) Compare expert system versus traditional system?
2) Explain the components of truth maintenance system?

OR

1) Explain about certainty factor
2) Discuss different types of membership functions

1) Write notes on ELIZA?
2) What are the foundations of AI? And Mention the sub-areas of AI?

OR

1) Give the applications of AI?
2) Write short notes on production system, Production rule?

1) State and explain A* algorithm?
2) Explain the concept of iterative depending A*?

OR

1) Illustrate Breadth-First Search tree generation with an example?
2) Solve the crypt-arithmetic puzzle for base and ball?

1) What is Satisfiability and Unsatisfiability of formula? Show that α: (A Λ B) Λ (B→ ~A) is un-satisfiable using the tableau method.
2) Define Resolution refutation method. Explain the steps for conversion of a formula to its CNF form?

OR

1) What is CNF? Convert the formula (~A→ B) Λ (C Λ ~A) into is equivalent CNF representation?
2) Define resolution of clauses? Explain the resolution process.

1) Represent the following logic program in a conventional semantic network. isa (X, living_thing) ← isa (X, animate); isa (X, animate) ← isa (X, human); isa(X, human) ← isa (X, man) ; isa(john , man) part_of(human,two_legs).
2) Discuss about how the frames were used to represent knowledge.

OR

1) Justify the necessity of the black board systems. Explain the main modules of the black board systems.
2) Explain the characteristics and evaluation of expert systems.

1) Discuss about MYCIN Expert system and various shells.
2) Distinguish blackboard system and rule-base system.

OR

1) Explain about the simple bayesian network with example
2) Discuss about the fuzzy sets operations

1) State Water Jug problem & Describe its solution?
2) Give the production rule &solution to missionaries and cannibals problem?

OR

1) Elaborate the concept of State Space Search?

2) Discuss the eight-puzzle problem& it's search tree?

1) Compare and contrast game problems and state space problem?
2) Develop a game tree for NIM game with max playing first?

OR

1) Discuss the cases of NIM game?
2) Write notes on the process of using evaluation function?

1) Find resolvent of the clauses in the set {A V B, ~A V B, C V ~B}. Explain the process.
2) Using resolution refutation principal, show that C V D is a logic consequence of S = {A V B,~A V D, C V ~B}.

OR

1) Enumerate the logical notation of predictable calculus? Explain Well-formed formula and atomic formulae?
2) Define First order predictable calculus. Explain the interpretations of formulae in FOL

1) Discuss briefly about conceptual dependency and its components.
2) Represent the given statements in CD(conceptual dependency)
   i."John Fertilized the field."
   ii. "Bill Threatened john with a broken nose."

OR

1) Distinguish the monotonic and non-monotonic systems.
2) Explain the advantages and disadvantages of expert systems

1) Discuss the issues in black board systems for problem solving.
2) Explain the steps involved in the KS(knowledge source) executions in a black board systems.

OR

1) Discuss about Bayesian Belief Network
2) Discuss about multi valued logic in fuzzy logic

1) Describe the concept of control strategies?
2) Explain briefly about the current trends in AI

OR

1) What is "magic square"? Illustrate any one of the methods to generate magic square.
2) Explain the tic-tac-toe game using nine element vector

1) Generate a game tree using MINMAX procedures?
2) Explain steps of alpha-beta pruning?

OR

1) What are the refinements to alpha-beta pruning?
2) Write notes on iterative deepening?

1) Evaluate the truth value of an FOL formula α: $(\forall X)(\exists Y)\, p(X,Y)$ under the following interpretation I: (a)D = {1,2}. (b) p(1,1)=F, p(1,2)=T, p(2,1)=T, p(2,2)=F.
2) Define Prenex Normal Form. Explain the conversion process of Formulae into PNF Notation.

OR

1) Explain the steps of Skolemization procedure and the concept of clauses in FOL.
2) Elaborately describe resolution refutation method in FOL.

1) Discuss briefly about the motivations and methods to build large knowledge bases using CYC.

2) Represent the frames and constraint expressions in CYC for the given two statements:
i. All birds have two legs
ii. All of Mary's friends speak English.

OR

1) Discuss the applications of expert systems?
2) Enumerate the shells and tools of expert systems?

1) Explain about the monotonic TMS
2) Explain about the non-monotonic TMS

OR

1) Discuss about Dempster-Shafer Theory
2) Discuss about Fuzzy Expert System with neat sketch